



Appl. No. 09/837,050
Amdt. Dated February 18, 2005
Reply to Office action of September 29, 2004

Amendments to the Specification:

Please insert the following title after the main title and before the first paragraph on page 1:

--BACKGROUND OF THE INVENTION--

Please insert the following title before the first full paragraph on page 1:

--BRIEF SUMMARY OF THE INVENTION--

Please amend the last full paragraph on page 5 to read as follows:

Further preferred embodiments or the inventive system become apparent to the skilled artisan especially by ~~the claims 10 to 15~~ and the following detailed description of the invention. This is especially with respect to the inventive system being implemented in a single-ear hearing aid device or in a binaural hearing aid system.

Please insert the following title before the first line on page 6:

--BRIEF DESCRIPTION OF THE DRAWINGS--

Please insert the following title before the paragraph beginning "In Fig. 1 there are schematically..." on page 6, at line 21:

--DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS OF THE INVENTION--

This listing of claims will replace all prior versions, and listings, of claims in the application:

1 1. (currently amended) A method for analyzing an
2 acoustical environment comprising acoustical sources located
3 in respective angular directions and at respective radial
4 distances with respect to at least two reception locations,
5 said method comprising the steps of:
6 - registering acoustical signals at said at least two
7 reception locations mutually distant by a given reception
8 distance and generating at least two respective first electric
9 signals representing said acoustical signals;
10 - calculating electronically, from said first electric
11 signals, at least one of the radial distances of sources of
12 acoustical signals in said acoustical environment with respect
13 to at least one of said reception locations, thereby
14 generating a distance signal;
15 - amplitude filtering said distance signal, thereby
16 generating a patterned distance signal;
17 - weighing a signal dependent from at least one of said
18 first signals by said patterned distance signal, thereby
19 generating an output signal representing said acoustical
20 signals from sources distributed in said environment
21 within a radial-distance pattern.

1 2. (currently amended) The method of claim 1, further
2 comprising performing said calculating according to

$$r_1 = \frac{|d\rangle|S_2|\langle}{\rangle|S_1|\langle - \rangle|S_2|\langle}$$

6 wherein ~~there~~ stands:

7 r_1 : for represents a shorter distance of the at least
8 two distances from the at least two locations to an acoustical
9 signal source;

10 $|d|$: represents a magnitude of the difference of the
11 distances between said at least two locations and said
12 acoustical signal source;

13 $\rangle|S_1|\langle$: represents representing a first acoustical signal
14 as registered at said one of said at least two locations with
15 said shorter distance from said acoustical signal source,
16 taken its absolute value and averaged over a predetermined
17 amount of time T; and

14 $\rangle|S_2|\langle$: represents representing a second acoustical signal
15 as registered at the second location with a larger distance
16 from said acoustical signal source, taken its absolute value
17 and averaged over the predetermined amount of time T.

1 3. (previously presented) The method of claim 1 or 2,
2 wherein said amplitude filtering is performed by means of at
3 least one band-pass amplitude filtering, passing amplitude
4 values within a predetermined amplitude band.

1 4. (previously presented) The method of claim 1, thereby
2 generating said signal dependent from said first electric
3 signals by weighing said first electric signals in dependency
4 under which spatial angle the respective acoustical signals
5 impinge at said at least two reception locations.

1 5. (previously presented) The method of claim 1, further
2 comprising the step of performing said amplitude filtering
3 with an adjustable filter characteristic.

1 6. (previously presented) The method of claim 1, further
2 comprising the step of performing said registering with at
3 least two microphones of a hearing aid apparatus and/or by at
4 least two microphones, each one of the microphones of a
5 binaural hearing aid system.

1 7. (previously presented) The method of claim 1, further
2 comprising the step of generating said first electric signals
3 as digital signals.

1 8. (original) The method of claim 7, further comprising
2 the step of generating said first electric signals as time to
3 frequency domain converted signal.

1 9. (original) A system for analyzing an acoustical
2 environment comprising:

3 at least two acoustical to electrical converters mutually
4 distant by a predetermined distance and generating respective
5 first electric output signals at at least two outputs of said
6 converters;

7 a calculating unit, the inputs thereof being
8 operationally connected to said outputs of said converters and
9 generating at an output a signal which is representative of a
10 distance of an acoustical source in said environment with
11 respect to one of said acoustical to electrical converters;

12 an amplitude filter unit with an input operationally
13 connected to the output of said calculation unit and
14 generating at an output an output signal which is dependent
15 from a signal to the input of said amplitude filter unit

16 weighed by a function which is dependent from the amplitude of
17 said input signal;

18 a weighing unit with at least two inputs, one thereof
19 being operationally connected to the output of said amplitude
20 filter unit and the second input thereof being operationally
21 connected to at least one of said outputs of said converters.

1 10. (original) The system of claim 9, said at least two
2 acoustical to electrical converters being mounted on a single
3 hearing aid apparatus or being mounted to two hearing aid
4 apparatuses of a binaural hearing aid apparatus set.

1 11. (original) The system of claim 9 or 10, wherein said
2 first electric output signals are led to respective analogue
3 to digital converters and time domain to frequency domain
4 converters before applied to said calculating unit.

1 12. (previously presented) The system of claim 9, wherein
2 said amplitude filter unit has a band-pass characteristic.

1 13. (previously presented) The system of claim 9, the
2 amplitude transfer characteristic of said amplitude filter
being adjustable.

1 14. (previously presented) The system of claim 9, wherein
2 said at least two outputs of said converters are operationally
3 connected to a beam former unit, an output of said beam former
4 unit being operationally connected to said second input of
5 said weighing unit.

1 15. (previously presented) The system of claim 9, wherein
2 an output of said weighingunit being frequency domain to time
3 domain converted and digital to analogue converted, the output
4 signal of said conversion being operationally connected to an
5 electrical to mechanical transducer of at least one hearing
6 aid apparatus.

1 16. (new) A method for analyzing an acoustical
2 environment comprising the steps of:

3 - registering acoustical signals at at least two
4 reception locations mutually distant by a given distance and
5 generating at least two respective first electric signals
6 representing said acoustical signals;

7 - calculating electronically, from said first electric
8 signals, at least one of the distances of sources of
9 acoustical signals with respect to at least one of said
10 locations, thereby generating a distance signal;

11 - amplitude filtering said distance signal, thereby
12 generating a patterned distance signal; and

13 - weighing a signal dependent from at least one of said
14 first signals by said patterned distance signal, thereby
15 generating an output signal representing said acoustical
16 signals from sources distributed in said environment within a
17 distance pattern, wherein said calculating is performed
18 according to the equation:

$$r_1 = \frac{|d| |S_2| \langle}{\rangle |S_1| \langle - \rangle |S_2| \langle}$$

22 wherein:

23 r_1 : represents a shorter distance of the at least two
24 distances from the at least two locations to an acoustical
25 signal source;

26 $|d|$: represents a magnitude of the difference of the
27 distances between said at least two locations and said
28 acoustical signal source;

29 $\langle |S_1| \rangle$: represents a first acoustical signal as registered
30 at said one of said at least two locations with said shorter
31 distance from said acoustical signal source, taken its
32 absolute value and averaged over a predetermined amount of
33 time T; and

34 $\langle |S_2| \rangle$: represents a second acoustical signal as
35 registered at the second location with a larger distance from
36 said acoustical signal source, taken its absolute value and
37 averaged over the predetermined amount of time T.